

Remarks

Claims 1-27 are currently pending with claims 1, 17, 21 and 22 being the independent claims. Claims 13, 16, and 24-26 stand rejected under 35 U.S.C. § 112, second paragraph. Claims 1-3, 7, 9-12, 17-20, 22, and 27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,771,116 to Farrah (hereafter “the Farrah patent”). Claims 1-4, 7, 9-11, 17, 22, and 27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,456,982 to Tournois (hereafter “the Tournois patent”). Claims 5-7 stand rejected under 35 U.S.C. § 103(a) over either the Farrah patent or the Tournois patent in combination with U.S. Patent No. 5,652,594 (hereafter “the Costas patent”). Claims 12 and 21 stand rejected under 35 U.S.C. § 103(a) over either the Farrah patent or the Tournois patent in combination with U.S. Patent No. 6,097,669 to Jordan *et al.* (hereafter “the Jordan *et al.* patent”).

Additionally, claims 18-20 have been objected to under 37 C.F.R. § 1.75. The specification has also been objected to for containing a typographical error.

I. The Objection to the Specification Has Been Overcome

The specification has been objected to for referencing ‘Figure 4A’, although there is no ‘Figure 4A in the present application. By the amendments provided herewith, Applicants have amended the specification to indicate that the intended reference was to ‘Figure 4’. Therefore, Applicants respectfully request that the Examiner withdraw the objection to the specification in light of the amendment provided herewith.

II. The Objection to Claims 18-20 Have Been Overcome

Claims 18-20 have been objected to under 37 C.F.R. § 1.75 for failing to further limit the subject matter of a previous claim. By the amendment provided herewith, Applicants have amended claims 18-20 to indicate that these claims are dependent upon claim 17, a previous

claim. In view of the foregoing amendments, Applicants respectfully request that the Examiner withdraw the objection to claims 18-20 as these claims are now in proper form.

III. Claims 13, 16, and 24-26 are Definite

Claims 13 and 16 stand rejected under 35 U.S.C. § 112, second paragraph because the term “interpretation logic” lacks appropriate antecedent basis. Claims 24-26 stand rejected under 35 U.S.C. § 112, second paragraph for failing to further limit the system of claim 21.

Claims 13 and 16 have been amended to clarify that the “interpretation logic” is the “identification logic”. Additionally, Applicants have amended claims 24-26 to reflect that these claims properly depend from claim 22.

In light of the foregoing amendments and remarks, Applicants respectfully submit that these claims are definite and respectfully request that the Examiner withdraw the rejections of claims 13, 16, and 24-26 as these claims are in condition for allowance.

IV. Claims 1-3, 7, 9-12, 17-20, 22 and 27 are Allowable Over the Farrah Patent

Claims 1-3, 7, 9-12, 17-20, 22 and 27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the Farrah patent.

Claims 1 and 17 recite a first module that is configured to “configured to generate a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate a target either moving at a second speed substantially slower than the first speed or being stationary”. Claim 22 recites a method including a step of “generating a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform

configured to illuminate target either moving at a second speed that is substantially slower than the first speed or being stationary”.

The Farrah patent discloses a method for “imaging both moving and stationary objects in a holographic system”. *See Abstract.* This system may use a number of different frequencies f_1 to f_n , which may be “driven sequentially”. *See col. 3, ll. 26-27.* Unlike the present invention, however, the Farrah patent does not disclose that “a first waveform” may be “configured to illuminate a target moving at a first speed” and that a “second waveform” may be “configured to illuminate a target” that is either stationary or moving at a speed that is substantially slower than the first speed. Rather, the Farrah patent discloses that a number of transmitters can be driven sequentially at different frequencies in order to generate a holographic image. *See col. 2, ll. 28-32; 36-39; 50-64.* This allows the system to “obtain[] increased aperture size” and improving the quality of the holograms produced. *See col. 1, ll. 35-40.* This is different than the present invention where a concatenated wavetrain includes a first waveform and a second waveform, each waveform being configured to illuminate a target moving at either a relatively fast speed or a relatively slow speed or a stationary object.

Therefore, because claims 1 and 17 recite a first module configured to “configured to generate a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate a target either moving at a second speed substantially slower than the first speed or being stationary”; and claim 22 recites a method including a step of “generating a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate target either moving at a second speed that is substantially slower than the first speed or being stationary”, the claims are allowable over the Farrah patent. Therefore, Applicants respectfully request that the Examiner withdraw the rejections of claims 1, 17 and 22 as these claims are in condition for allowance. Claims 2-3, 7, 9-12, 18-20 and 27 depend on one of claim 1, 17, and 22, and are likewise allowable for at least the foregoing reasons.

V. Claims 1-4, 7, 9-11, 17, 22 and 27 are Patentable Over the Tournois Patent

Claims 1-4, 7, 9-11, 17, 22 and 27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the Tournois patent.

Claims 1 and 17 recite a first module that is configured to “configured to generate a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate a target either moving at a second speed substantially slower than the first speed or being stationary”. Claim 22 recites a method including a step of “generating a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate target either moving at a second speed that is substantially slower than the first speed or being stationary”.

The Tournois patent is directed to a system for imaging used particularly in ultrasonic submarine cameras, submarine target classifiers, and medical acoustic imaging and non-destructive tests. *See Abstract.* The Tournois patent uses waveforms having multiple codes to permit multiple transmitter and receiver pairs to be used in an imaging system. Thus, each transmitter may have a corresponding receiver and, using a different channel. *See FIGS. 1, 12-13.*

The Tournois patent fails to disclose or suggest, however, the claimed first module configured to “configured to generate a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate a target either moving at a second speed substantially slower than the first speed or being stationary”, as recited in claims 1 and 17; or a method including a step of “generating a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate target either moving at a second speed that is substantially slower than the first speed or being stationary”, as recited in claim 22. Therefore, Applicants respectfully request that the Examiner withdraw the rejections of claims 1, 17 and 22 as these claims are in condition for allowance.

Claims 2-4, 7, 9-11, and 27 depend from the aforementioned independent claims and are allowable for at least this reason.

VI. Claims 5-7 are Patentable Over Either the Farrah Patent or the Tournois Patent in view of the Costas Patent

Claims 5-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over either the Farrah patent or the Tournois patent in view of the Costas patent.

The Farrah patent and the Tournois patent are discussed in detail above with respect to claim 1. The Costas patent discloses a signal processor for use in radar and sonar systems. *See Abstract.* The Costas system may use different waveforms V_1, V_2, \dots, V_n , which are fed into the signal processor after being transmitted and received by the receiver. *See Col. 4, ll. 37-44.* A “greatest-of” selector is then employed to determine which of the waveforms has the greatest amplitude. *See col. 4, ll. 49-55; col. 6, ll. 20-24.* The purpose of performing the processing disclosed in the Costas patent is to “optimize system performance under [various] conditions” by ensuring that “the basic pulse” is “medium-matched.” *See col. 3, ll. 39-41.* The Costas patent fails to remedy the above-identified deficiencies of both the Farrah patent and the Tournois patent.

Thus, the Costas patent fails to disclose or suggest a first module that is configured to “configured to generate a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate a target either moving at a second speed substantially slower than the first speed or being stationary”, as recited in claim 1. Claims 5-7 depend from claim 1 and are allowable for at least this reason.

VI. Claims 12 and 21 are Patentable over the Farrah Patent or the Tournois Patent in view of the Jordan *et al.* Patent

Claims 12 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over either the Farrah patent or the Tournois patent, when taken in view of the Jordan *et al.* patent.

The Farrah patent and the Tournois patent were discussed above in detail. The Jordan *et al.* patent is directed toward a system and method for “remov[ing] echoes *from fixed targets* and external sound sources from the sodar signals while providing maximum sensitivity to desired signals.” *See* col. 2, ll. 10-14 (emphasis added). The Jordan *et al.* patent discloses that

Transmitting a concatenated string of wavelets creates received signals from the clear air and fixed targets that are highly correlated with the transmitted wavelet. The corresponding wavelet transform contains large coefficients in the wavelet domain at only one primary level (i.e., the same level as the transmitted signal). External and electronic noise generated coefficients at many levels and much of their energy can easily be removed.

The Jordan *et al.* patent fails to disclose or suggest the use of a first or second waveform or that the first waveform is “configured to generate a concatenated ultrasonic wavetrain including a first waveform configured to illuminate a target moving at a first speed and a second waveform configured to illuminate a target either moving at a second speed substantially slower than the first speed or being stationary”, as recited in claims 1 and 21.

For at least the foregoing reasons, claim 21 is allowable over both the Farrah patent and the Tournois patent in view of the Jordan *et al.* patent. Additionally, claim 12 depends from claim 1 and is allowable for at least the reasons set forth above.

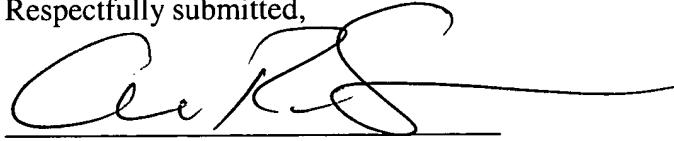
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn.

Applicants believe that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,



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